WHAT IS CLAIMED IS:

1   1.   A method for selecting one of multiple proposed paths to a device,

2 comprising:

3   for each proposed path, determining a number of components the proposed path

4 shares with existing paths to the device, wherein the components comprise points of

5 failure such that if one component fails then the paths including the component fails; and

6   using the determined number of shared components for each proposed path to

7 select one proposed path.

1   2.   The method of claim 1, wherein using the determined number of shared

2 components to select one proposed path comprises selecting the proposed path having a

3 least number of shared components with existing paths, and wherein the selected

4 proposed path is selected to provide an additional path to the device.

1   3.   The method of claim 1, wherein using the determined number of shared

2 components to select one proposed path comprises selecting the proposed path having a

3 greatest number of shared components with existing paths, wherein each proposed path

4 comprises one existing path to the device, and wherein the selected proposed path is

5 selected to be removed as one of the paths to the device.

1   4.   The method of claim 1, wherein each path includes an adaptor in a

2 computer and an interface port in the device, wherein determining the number of

3 components the proposed path has in common with existing paths further comprises

4 determining a number of components the adaptor in the proposed path shares with the

5 adaptors of existing paths to the device and determining a number of components the

6 proposed path shares with the interface ports of existing paths to the device.

1   5.   The method of claim 4, wherein each path further includes a source port

2 and destination port on a switch, wherein the adaptor for a path connects to the source

3 port of the switch and wherein the interface port for the path connects to the destination

4 port of the switch, wherein determining the number of components the proposed path has

5 in common with existing paths further comprises determining components on the switch

6 the proposed path has in common with existing paths.

1   6.   The method of claim 5, wherein determining components on the switch

2 the proposed path has in common with existing paths further comprises:

3   determining whether the proposed path and each existing path use the same

4 switch;

5   determining whether the source port of the proposed path is in a port card

6 including the source or destination port of any of the existing paths; and

7   determining whether the destination port of the proposed path is in a port card

8 including the source or destination port of any of the existing paths.

1   7.   The method of claim 4, wherein the device comprises a control unit

2 providing access to a storage space, and wherein each proposed path connects one adaptor

3 in the computer with one interface port in the control unit.

1   8.   The method of claim 1, further comprising:

2   maintaining an availability index for each proposed path;

3   incrementing the availability index for each component the proposed path and

4 each existing path share, wherein the availability index is used to select the proposed

5 path.

1   9.   A system for selecting one of multiple proposed paths to a device,

2 comprising:

3   means for determining, for each proposed path, a number of components the

4 proposed path shares with existing paths to the device, wherein the components comprise

5 points of failure such that if one component fails then the paths including the component

6 fails; and

7   means for using the determined number of shared components for each proposed

8 path to select one proposed path.

1   10.   The system of claim 9, wherein the means for using the determined

2 number of shared components to select one proposed path comprises means for selecting

3 the proposed path having a least number of shared components with existing paths, and

4 wherein the selected proposed path is selected to provide an additional path to the device.

1   11.   The system of claim 9, wherein the means for using the determined

2 number of shared components to select one proposed path comprises means for selecting

3 the proposed path having a greatest number of shared components with existing paths,

4 wherein each proposed path comprises one existing path to the device, and wherein the

5 selected proposed path is selected to be removed as one of the paths to the device.

1   12.   The system of claim 9, wherein each path includes an adaptor in a

2 computer and an interface port in the device, wherein the means for determining the

3 number of components the proposed path has in common with existing paths further

4 comprises means for determining a number of components the adaptor in the proposed·

5 path shares with the adaptors of existing paths to the device and determining a number of

6 components the proposed path shares with the interface ports of existing paths to the

7 device.

1   13.   The system of claim 9, wherein each path further includes a source port

2   and destination port on a switch, wherein the host adaptor for a path connects to the

3   source port of the switch and wherein the interface port for the path connects to the

4   destination port of the switch, wherein the means for determining the number of

5   components the proposed path has in common with existing paths further comprises

6   means for determining components on the switch the proposed path has in common with

7   existing paths.

1   14.   The system of claim 13, wherein the means for determining components

2   on the switch the proposed path has in common with existing paths further comprises:

3   means for determining whether the proposed path and each existing path use the

4   same switch;

5   means for determining whether the source port of the proposed path is in a port

6   card including the source or destination port of any of the existing paths; and

7   means for determining whether the destination port of the proposed path is in a

8   port card including the source or destination port of any of the existing paths.

1   15.   The system of claim 12, wherein the device comprises a control unit

2   providing access to a storage space, and wherein each proposed path connects one adaptor

3   in the computer with one interface port in the control unit.

1   16.   The system of claim 9, further comprising:

2   means for maintaining an availability index for each proposed path;

3   means for incrementing the availability index for each component the proposed

4   path and each existing path share, wherein the availability index is used to select the

5   proposed path.

1   17.   An article of manufacture for use in selecting one of multiple proposed

2   paths to a device, the article of manufacture comprising code embedded in a computer

3   readable medium capable of causing a processor to perform:

4   for each proposed path, determining a number of components the proposed path

5   shares with existing paths to the device, wherein the components comprise points of

6   failure such that if one component fails then the paths including the component fails; and

7   using the determined number of shared components for each proposed path to

8   select one proposed path.

1   18.   The article of manufacture of claim 17, wherein using the determined

2   number of shared components to select one proposed path comprises selecting the

3   proposed path having a least number of shared components with existing paths, and

4   wherein the selected proposed path is selected to provide an additional path to the device.

1   19.   The article of manufacture of claim 17, wherein using the determined

2   number of shared components to select one proposed path comprises selecting the

3   proposed path having a greatest number of shared components with existing paths,

4   wherein each proposed path comprises one existing path to the device, and wherein the

5   selected proposed path is selected to be removed as one of the paths to the device.

1   20.   The article of manufacture of claim 17, wherein each path includes an

2   adaptor in a computer and an interface port in the device, wherein determining the

3   number of components the proposed path has in common with existing paths further

4   comprises determining a number of components the adaptor in the proposed path shares

5   with the adaptors of existing paths to the device and determining a number of components

6   the proposed path shares with the interface cards of existing paths to the device.

1   21.   The article of manufacture of claim 20, wherein each path further includes

2 a source port and destination port on a switch, wherein the adaptor for a path connects to

3 the source port of the switch and wherein the interface port for the path connects to the

4 destination port of the switch, wherein determining the number of components the

5 proposed path has in common with existing paths further comprises determining

6 components on the switch the proposed path has in common with existing paths.

1   22.   The article of manufacture of claim 21, wherein determining components

2 on the switch the proposed path has in common with existing paths further comprises

3 causing the processor to perform:

4   determining whether the proposed path and each existing path use the same

5 switch;

6   determining whether the source port of the proposed path is in a port card

7 including the source or destination port of any of the existing paths; and

8   determining whether the destination port of the proposed path is in a port card

9 including the source or destination port of any of the existing paths.

1   23.   The article of manufacture of claim 20, wherein the device comprises a

2 control unit providing access to a storage space, and wherein each proposed path connects

3 one adaptor in the computer with one interface port in the control unit.

1   24.   The article of manufacture of claim 19, wherein the code is further capable

2 of causing the processor to perform:

3   maintaining an availability index for each proposed path;

4   incrementing the availability index for each component the proposed path and

5 each existing path share, wherein the availability index is used to select the proposed

6 path.